ENVIRONMENT REPORT 2006

# People and Innovation

## . . . powering Saskatchewan to a bright future

At SaskPower, we recognize growth comes with responsibility.

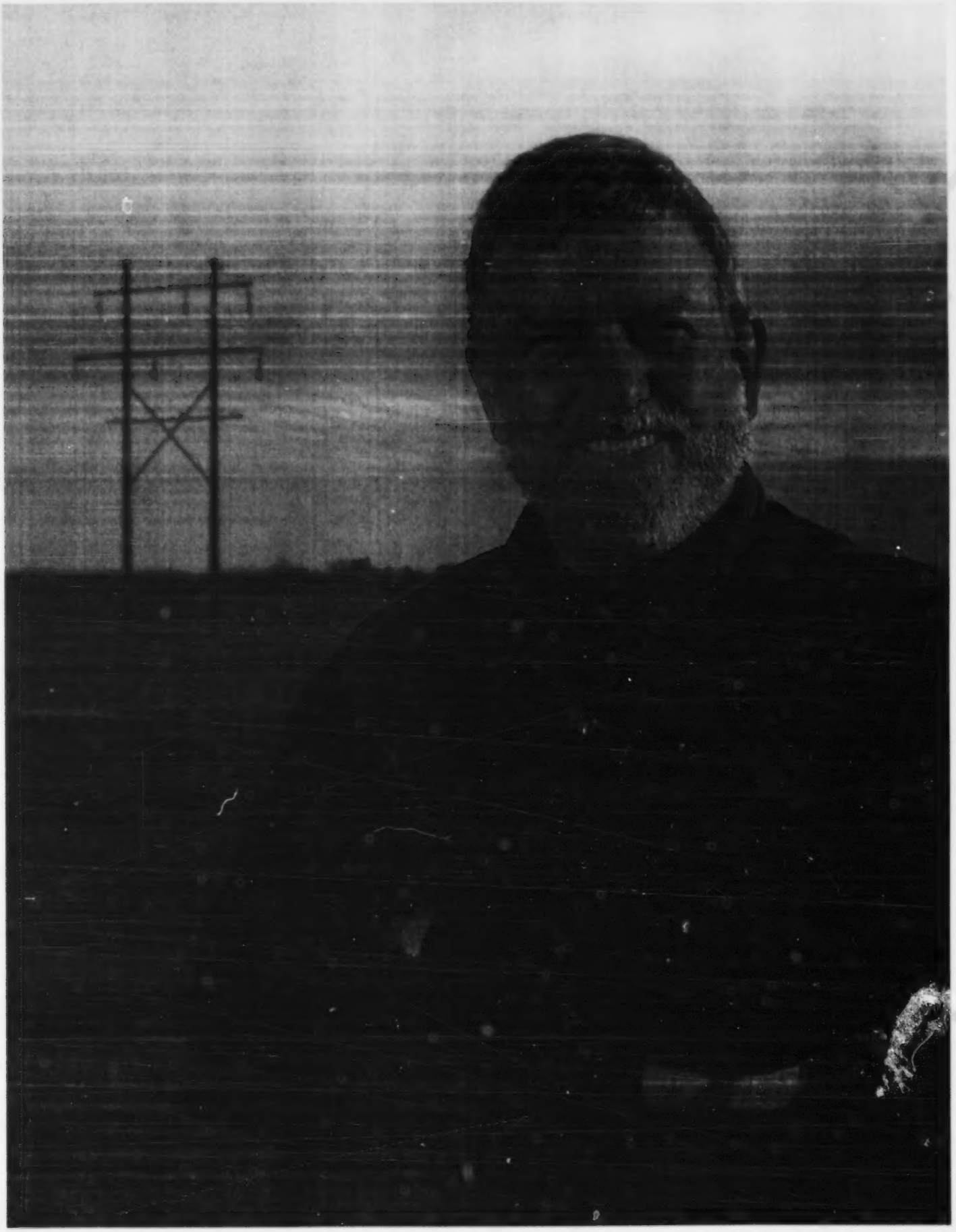
That's because the way we conduct our business has a direct effect on our air, land and water.

A new corporate strategic direction is providing us with a simple reminder of how we need to tackle the environmental challenges ahead.

Our vision statement tells us about our two most important resources — people and innovation.

Together, they may help us grow in ways we never imagined.

On the cover:
*Shelley Heidinger, SaskPower Shand Greenhouse*



## OUR YEAR AT A GLANCE

- New corporate strategic direction developed, with [illegible] mission statement.
- Extensive research and analysis continues on next major supply source.
- Environment-focused Life Cycle Assessment joins supply planning process.
- Major feasibility study progresses on what would be the world's first utility-scale near-zero emissions pulverized coal plant.
- 150-megawatt Centennial Wind Power Facility is commissioned, giving Saskatchewan one of the highest percentages of wind generation capacity by control area in Canada.
- Three Environmentally Preferred Power contracts signed for 15.3 megawatts generated from heat recovery projects.
- Industry-leading Emissions Control Research Facility (ECRF) at the Poplar River Power Station develops and tests mercury and particulate reduction technologies.
- Poplar River Power Station Unit #2 rebuild concluded, resulting in increased efficiency and reduction of particulate emissions.
- Advanced online environmental screening tool completed.
- Comprehensive overview of environmental laws and regulations launched on company intranet.
- Environmental Management System re-registered under ISO 14001 Standard following annual independent audits.
- Province-wide information campaigns provide customers with tips on how to reduce electricity use and its impact on the environment.
- SaskPower Shand Greenhouse nears five million seedlings distributed to community and non-profit groups since opening.
- SaskPower and Saskatchewan Association of Agricultural Societies and Exhibitions receive Waste Minimization Award for youth Clean Team program.

Robert Stedwill, *Planning, Environmental and Regulatory Affairs*

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## Profile

As the principal supplier of electricity in Saskatchewan, SaskPower serves more than 445,000 customers and manages $4.2 billion in assets. We have over 2,400 permanent full-time employees located in 71 communities.

Our company operates three coal-fired power stations, seven hydroelectric stations, four natural gas stations and two wind facilities with an aggregate generating capacity of 3,214 megawatts (MW). The focus of recent additions to our system is on environmentally sustainable and renewable energy sources, with the new 150-MW Centennial Wind Power Facility officially joining the Corporation's generating fleet in 2006.

SaskPower also has purchase agreements with the Meridian Cogeneration Station, Cory Cogeneration Station, SunBridge Wind Power Project and NRGreen Kerrobert Heat Recovery Project. The 454 MW of electricity from these facilities brings our company's total available capacity to 3,668 MW.

SaskPower maintains more than 155,000 kilometres of power lines, 52 high voltage switching stations and 174 distribution substations. We also operate three wholly owned subsidiaries — SaskPower International, NorthPoint Energy Solutions and SaskPower Shand Power Station.

## INTRODUCTORY MESSAGE

More than 100 years ago, a Swedish scientist put forward the proposition that the worldwide production of carbon dioxide may be changing our climate. Since that time, much scientific, technical and socio-economic information has been processed and assessed. Overwhelming evidence continues to mount concerning the effect of fossil fuels on our environment. As a result, public and corporate concern has never been greater.

At the national level, clarity around future regulatory requirements continues to be elusive. However, in the face of this ambiguity there remains an indisputable fact. We must continue to make choices that best reflect the values of our customers and shareholders — the people of Saskatchewan. This is a province that has been built, literally and figuratively, upon the environment in which we live. And with that history comes an inherent sense that we need to use our resources wisely and with respect.

At SaskPower, we recognize that as our natural environment is changing, so is our business environment. As a result, in 2006 we reviewed and amended our company's strategic direction. Our new vision statement focuses on people and innovation as keys to securing the future, while our mission statement emphasizes the role sustainability must play in all of our decision making.

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Presently, we are a company that faces a major reshaping. Over the next 20 years, we will refurbish or replace a substantial portion of our generation and transmission facilities. This will provide us with a once-in-a-lifetime opportunity to look at how we can effect substantial and positive change across all of our operations. On a daily basis, we have always carried an undeniable responsibility to continuously examine how we deliver our service, as well as how it impacts the environment around us. More than ever, this challenge also extends to longer-term planning.

The new 150-megawatt Centennial Wind Power Facility is helping us meet our immediate needs while expanding the presence of renewable energy in SaskPower's generation portfolio. Short-term growth in demand is being met in two additional ways: energy conservation programs and the development of small-scale environmentally friendly sources of generation by independent power producers. But decisions concerning long-term base load supply beyond 2010 will need to be made in the coming year.

Generation assets are costly and long lived, so we must choose wisely. Major research is being conducted on a variety of supply options that must meet a range of environmental, economic and performance criteria. While much attention has been given to our groundbreaking feasibility study into clean coal technology, it is not the only potential choice being considered. We are also conducting an extensive investigation into supply options that include polygeneration, compliant coal ($CO_2$ capture ready), demand side management, cogeneration, purchased power, imports, nuclear power, natural gas options, integrated gasification combined cycle (coal or other fuels), wind, hydroelectricity and other renewables. The introduction of Life Cycle Assessment has the promise to greatly assist us in establishing a well rounded view of the environmental performance of each particular option.

Aside from future supply planning, we remain committed to studying new technologies and applying them to existing facilities where possible. SaskPower's Emissions Control Research Facility (ECRF) at the Poplar River Power Station is an example of our work with institutional and industry partners to advance control technologies. Presently, the primary focus is on the reduction of flue gas mercury emissions. This will lead to the installation of Canada's first full-scale long-term mercury control system. Work at the ECRF will be invaluable as we strive to meet new national standards for mercury emissions from coal-fired generation plants recently endorsed by the Canadian Council of Ministers of the Environment.

If we are to succeed in meeting all of our environmental obligations — both ethical and regulatory — it will also be because we successfully maintain a high level of transparency. Our relationships with stakeholders and community groups will continue to be built on honesty and respect. And our governance structure needs to continue to provide the checks and balances necessary for us to meet our objective of continuous improvement.

When it comes to the challenges around electricity and the environment, we must look both inside and outside of the Corporation for solutions. We must remember we are all stewards — employees, partners, governments, regulatory agencies and customers. We must push forward and be relentless in our search for a better way. We must continue to ask questions and, most importantly, answer them.

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Pat Youzwa
President and Chief Executive Officer

Al Macatavish
Chair
Environment, Occupational Health and Safety Committee
Board of Directors

# Continuous improvement

## TURNING A VISION INTO REALITY

At SaskPower, as our knowledge about the environmental consequences of our business grows, so must our knowledge about how to respond. Our formula for success is outlined in our vision statement: "People and innovation...powering Saskatchewan to a bright future." And it is our commitment to continuous improvement that will allow us to provide safe, reliable and sustainable power to our customers.

The choices we make as a company define us — they establish our identity and place in the community. SaskPower was founded on the notion of service, and our company has long been recognized as a significant force in the development of Saskatchewan. For nearly 80 years, SaskPower has responded to the operational challenges associated with growing to reach a service area of nearly 620,000 square kilometres. With that growth have also emerged serious environmental and economic tests.

We are driven to rise to the task of meeting environmental demands by our belief in steadfastly improving our practices, always striving to get better at what we do.

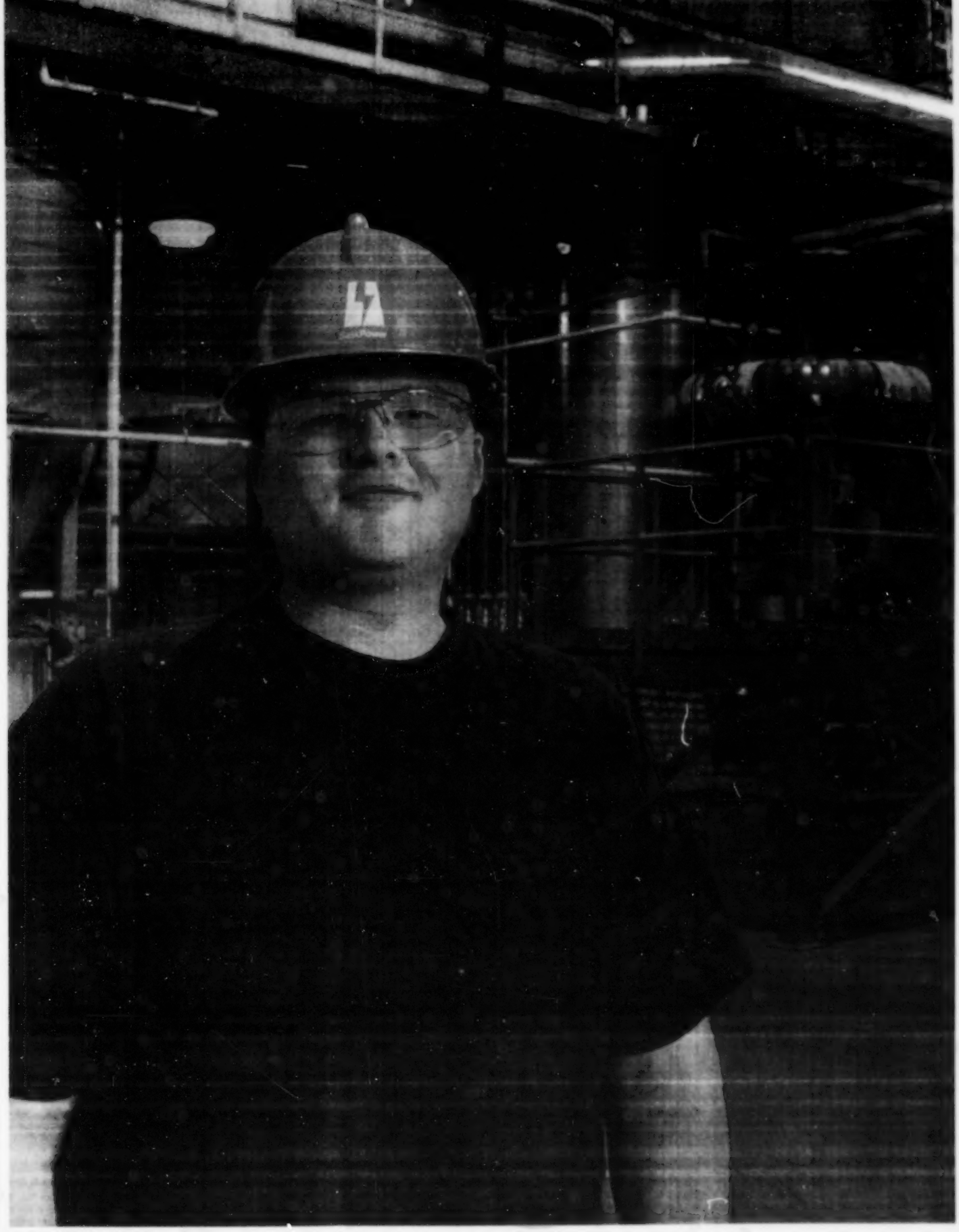
### A NEW GENERATION

Aside from meeting the day-to-day environmental challenges of providing electricity to more than 445,000 customers, we are engaged in intensive planning and analysis related to securing the future supply of electricity. Over the next 20 years, SaskPower will have to make decisions concerning the refurbishment or replacement of a large portion of our generation and transmission facilities. This will allow us to meet growing demand and the ongoing need for reliability, while addressing the state of infrastructure reaching the end of its technical, economic and environmentally acceptable life.

Our future supply strategy emphasizes a responsible, sustainable mix of electricity supply options that balance financial, environmental and social considerations. In the medium- and long-terms, we are anticipating a near zero-emissions future. The key to reducing greenhouse gas emissions from fossil fuel generation, of which carbon dioxide ($CO_2$) is the largest component, is the replacement of SaskPower's existing coal-fired fleet with zero or low $CO_2$-emitting technologies.

Until 2010, new supply requirements will be met by our Green Power Portfolio (GPP), which is providing electricity generated from environmentally friendly sources. Commissioned in 2006, the 150-megawatt (MW) Centennial Wind Power Facility gives Saskatchewan one of the highest percentages of wind generation capacity by control area in Canada, representing approximately 5% of the province's total electricity generation. The Centennial Wind Power Facility is owned by our subsidiary, SaskPower International, and is located 25 kilometres southeast of Swift Current. Its 83 wind turbines can produce enough electricity to serve about 64,000 homes. The GPP also includes plans for 40-MW run-of-the-river hydro project, 45 MW of Environmentally Preferred Power (EPP), and energy conservation initiatives. In addition, unsolicited proposals from independent power producers will be considered as needed, provided the technology results in no new net emissions.

During 2011-2014, it is anticipated SaskPower will refurbish or retire Boundary Dam Power Station Units #1, #2, #3 and #4, as well as Queen Elizabeth Power Station Units #2 and #3. Meanwhile, the next major decision around future supply will be made by mid-2007. Options being reviewed include clean coal, polygeneration, compliant coal ($CO_2$ capture ready), hydroelectricity, wind/gas hybrid, biomass, Queen Elizabeth repowering, imports, or natural gas options.



Beyond 2014, decisions will be made on new sources to fill the supply gap from options that include: clean coal, polygeneration, compliant coal ($CO_2$ capture ready), demand side management, cogeneration, purchased power, imports, nuclear power, natural gas options, integrated gasification combined cycle (coal or other fuels), wind, hydroelectricity and other renewables.

## FUELING INNOVATION

Presently, two-thirds of the province's electricity is produced using Saskatchewan's abundant supply of lignite coal. It historically has played a large role in base-load generation because it is secure and low-cost. However, as a fossil fuel it also creates air emissions when burned. Significant progress is being made on controlling particulate matter, sulphur dioxide ($SO_2$), nitrogen oxides ($NO_x$) and mercury. $CO_2$ capture remains the most significant challenge.

In addition to work at our Emissions Control Research Facility (ECRF) at the Poplar River Power Station, SaskPower is advancing research into emissions control through its $20-million Clean Coal Project. This study is investigating the feasibility of the world's first near-zero emissions pulverized coal plant. It would include the use of technology capable of capturing more than 90% of $CO_2$ emissions. The additional use of $SO_2$, $NO_x$, mercury and particulate control and capture mechanisms would result in a near-zero emissions status.

Should the 300-MW clean coal plant proceed, it would capture approximately 8,000 tonnes per day of $CO_2$. The $CO_2$ would be sold for enhanced oil recovery operations in southeast Saskatchewan, where it ultimately would be sequestered in deep geological formations. It is expected that the revenue from the $CO_2$ would offset the cost of capture and delivery. An expansion of the Shand Power Station near Estevan has been identified as the potential site for a new unit.

While SaskPower is taking advantage of its long-term relationships with the International Test Centre for Carbon Dioxide Capture at the University of Regina and the Petroleum Technology Research Centre at Regina's Research Park to further the Clean Coal Project, we have also developed additional key partnerships. The core $CO_2$ separation technology process is being jointly developed by SaskPower with Air Liquide Canada and Babcock & Wilcox Canada (B&W). We also have a boiler design supply partnership agreement with B&W, a project engineering agreement with Neill and Gunter, as well as a turbine generator set agreement with Marubeni Canada Limited and Hitachi Limited.

If the resulting clean coal technology proves feasible, the potential is vast. This is especially true given estimates that by 2020, approximately 40% of the globe's electricity will come from this fossil fuel. The successful implementation of a commercial scale facility could see SaskPower and its project partners taking this groundbreaking expertise beyond our borders. However, the technical and economic hurdles ahead remain immense. Following a thorough analysis and evaluation of economic, technical, regulatory and environmental considerations, a final decision whether to proceed could be made as early as mid-2007.

SaskPower is also participating in an evaluation of polygeneration as a supply source. For feedstock, the facility would use petroleum coke or petroleum residuals from the oil refining process to create a combustible synthetic gas. Advanced technology would nearly eliminate emissions, while using hydrogen, nitrogen, steam and $CO_2$ to produce commodities such as electricity and fertilizer.

## THE POWER OF ANALYSIS

As all generation options affect the environment in one way or another, it can be difficult to establish which source of power has the best overall environmental performance. For certain technologies, the majority of impacts occur during construction. However, for others, fuel sourcing, power generation, or decommissioning are the dominant sources of environmental effects.

SaskPower's goal is to reduce the environmental footprint of power generation in the province. To enhance our understanding, SaskPower has introduced Life Cycle Assessment (LCA) into our planning process. LCA will allow us to examine a wide range of environmental impacts throughout the life of a power project, including construction, fuel sourcing, generation operations, electricity delivery, waste management, and eventual power plant decommissioning.

By using LCA, we will be able to better determine the relative environmental benefits and trade-offs of various supply options. From this comprehensive performance assessment, the Environmental Performance Index of each power source will be established, and the cumulative Environmental Improvement Portfolios (representing the combined power portfolio sources) will be calculated. This approach will help us objectively evaluate and select among upgrades to existing facilities and new generation source options. In the longer term, LCA will prove valuable in corporate decisions in all areas of our company's operations that have an environmental footprint.

In addition to LCA, SaskPower's online Environmental Screening System (ESS) is strengthening environmental reviews associated with new project development. Completed in 2006, this website mapping tool assists with the evaluation of environmental impacts and legal requirements. Using Geographic Information System (GIS) technology, the ESS combines more than 50 different layers of environmental information on one screen. End-user training for the new system will occur in 2007.

## THE CORE OF OUR COMMITMENT

Throughout the history of our company, one major constant has been an unwavering commitment to the communities in which we operate. In addition to the release of a new vision and mission, in 2006 we released a new values statement that succinctly communicates our responsibility as a corporate citizen: "Respect, integrity and openness in all we do." In light of this obligation, when it comes to environmental protection we are dedicated to improving performance, demonstrating leadership, operational transparency, and engaging stakeholders and the communities we serve.

### MANAGING ENVIRONMENTAL PERFORMANCE

The foundation of SaskPower's efforts to respond to environmental challenges is our ISO 14001 Environmental Management System (EMS). It gives our company, employees and contractors the necessary structure to improve our overall performance. Specifically, the ISO 14001 Standard provides the framework for identifying environmental issues, leading to the management, measurement, evaluation and auditing of activities with an underlying goal of continuous improvement. This set of demanding measures is set by the International Organization for Standardization (ISO) — a non-governmental, worldwide federation of national standards bodies from 140 countries that works in partnership with international organizations, governments, industry, as well as business and consumer representatives.

Since implementation in 2000, SaskPower has maintained eight ISO 14001 registrations through annual independent EMS audits conducted at facilities across the province. Annual internal EMS audits are also conducted by qualified SaskPower personnel. All elements of SaskPower's EMS are regularly monitored and evaluated. All new employees attend EMS training and must renew their training every three years. Instruction is also provided for contractors whose work is related to significant environmental aspects.

## PROVIDING A GUIDING LIGHT

SaskPower's Environmental Policy outlines our overall commitment to environmental responsibility. As required by our EMS, it is reviewed each year. The core principles within the Environmental Policy that are designed to protect our air, land and water are:

1. Compliance with relevant environmental legislation, regulations and corporate environmental commitments;
2. Prevention of pollution; and
3. Continual improvement of environmental management systems and environmental performance.

The complete policy can be reviewed on page 32.

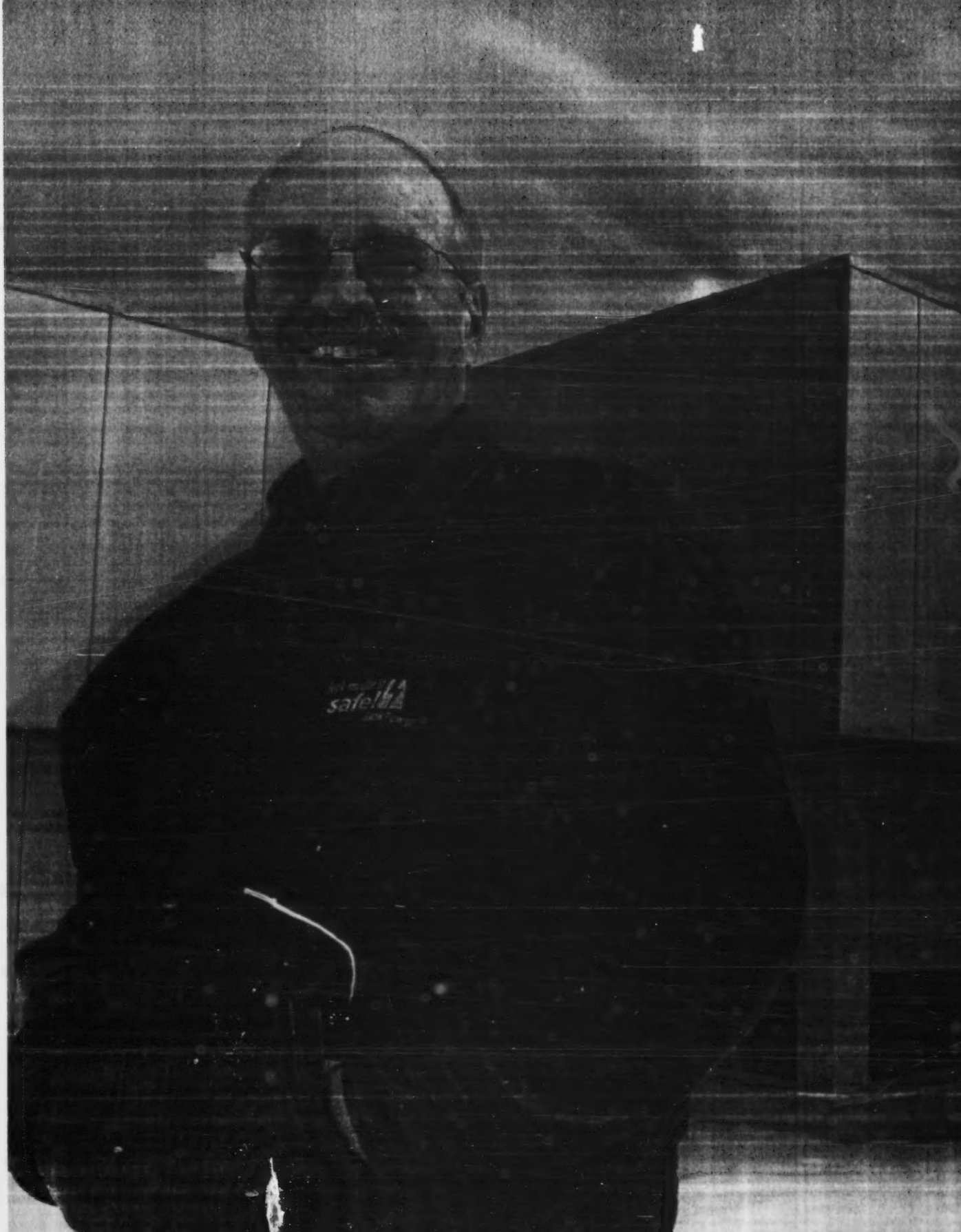
## MAINTAINING STRONG CORPORATE GOVERNANCE

The Environment, Occupational Health and Safety (EOH&S) Committee of our Board of Directors augments our EMS by ensuring that SaskPower proactively addresses issues and is in compliance with regulatory and statutory requirements. It also monitors corporate standards, reports on trends and public policy issues, reviews emergency response procedures, and recommends policies and actions.

During the year, the EOH&S Committee advanced the assessment of our practices on a number of fronts: affirming SaskPower's Environmental Policy, reviewing compliance with mining reclamation plans, monitoring the safety and sustainability of dam structures, as well as tracking changes to federal environmental legislation.

## ENHANCING EMPLOYEE AWARENESS

Elevating employee understanding of environmental issues and corresponding employee responsibility is a priority. *A Guide to Environmental Legislation* was completed in 2006 and launched on our company intranet site. It provides an overview of applicable sections of environmental laws and regulations. In addition, a workshop on environmental legislation began development in 2006 for delivery in 2007.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# A STRATEGY FOR IMPROVED PERFORMANCE

## GREEN POWER PORTFOLIO (GPP)

Our short-term strategy to ensure that all of Saskatchewan's new electricity needs until 2010 are met with environmentally friendly sources is called the GPP. This supply management program includes wind, the Environmentally Preferred Power (EPP) Program, distributed generation projects, energy conservation programs, and 40 megawatts (MW) of run-of-the-river hydro.

**A) Wind**

The GPP has resulted in the commissioning of the 150-MW Centennial Wind Power Facility southeast of Swift Current. Our province now has 172 MW of wind power — enough zero-emissions electricity to provide power to about 73,000 homes. This total gives Saskatchewan one of the highest percentages by installed capacity in Canada. We estimate that since 2001, the province's wind generation has reduced carbon dioxide ($CO_2$) emissions by approximately 477,000 tonnes — the amount of $CO_2$ that would have been emitted if SaskPower had instead used natural gas generation.

The Centennial Wind Power Facility is currently Canada's second largest operating wind facility. Located on 30-square kilometres of land, it incorporates 83 Vestas V80 wind turbines, each generating 1.8 MW of power. They operate with wind speeds between 15-90 kilometres/hour, reaching full power at wind speeds of 50 kilometres/hour. In addition to SaskPower International's investment, the Government of Canada is providing approximately $54 million in funding over 10 years through the Wind Power Production Incentive (WPPI) Program.

Our province's other two wind facilities — Cypress and SunBridge — provide electricity for SaskPower's EcoLogo-certified GreenPower product. It allows industrial, commercial and individual customers the opportunity to support the development of renewable energy in Saskatchewan by purchasing 100 kilowatt-hour (kWh) blocks of GreenPower. A single block purchased each month has the similar environmental impact as planting about 200 trees over the course of a year.

GreenPower was launched in 2002 to business, residential and farm customers. Support for GreenPower has resulted in 33 wind turbine towers being erected in Saskatchewan. The Government of Canada, Government of Saskatchewan, SaskTel, University of Regina and Hitachi Canada purchase GreenPower, while SaskPower is using the product to meet the equivalent of all the electrical needs for our head office.

**B) Environmentally Preferred Power (EPP) Program**

Our EPP Program is also part of the Green Power Portfolio. EPP provides an opportunity for SaskPower to partner with independent power producers to build and operate small-scale generation projects. Through the EPP Program, SaskPower plans to acquire up to 45 MW of environmentally progressive electricity generation capacity. Technologies that may be considered include: flare gas, wind, low-impact hydro, biomass, biogas, heat recovery from an existing waste heat source, and solar.

In September 2003, in Phase I of the program, SaskPower issued its first Expression of Interest for EPP projects between 25 kilowatts (kW) and 5 MW in size. Three projects totalling 13 MW were selected. In 2005, SaskPower signed a Power Purchase Agreement (PPA) with Alliance Pipeline for a 5-MW heat recovery project located in Kerrobert, Saskatchewan. NRGreen Power Limited, a sister company to Alliance Pipeline, recently announced the completion of installation. The project captures exhaust heat from Alliance Pipeline's natural gas compressor station and uses patented technology to convert the waste heat into electricity, which is then fed into the province's electrical grid. This is the first of four waste heat units being built on Alliance's natural gas pipeline in Saskatchewan. The other projects selected were wind power; one was withdrawn while the other is still under discussion.

In Phase II of the EPP Program, the size limit for eligible projects was increased to 25 MW, largely due to feedback from proponents who were responding to projected economies of scale to be gained from slightly larger projects.

A total of 17 proposals from 11 proponents were submitted. From these submissions, four projects from two proponents were selected totaling approximately 40 MW. In 2006, SaskPower signed PPAs with NRGreen Power Limited for three 5.1-MW heat recovery projects at Alliance Pipeline compressor stations near Estlin, Loreburn and Alameda totalling 15.3 MW. The other project was a 25-MW wind power project near Moosomin. The Corporation is currently negotiating a PPA with the proponent.

**C) Distributed Generation (DG)**

DG is the application of small generators at a consumer's site rather than at large centralized power stations. Energy available at the site produces electricity, which can be used or fed into the electrical grid. Advantages include reduced line losses, local fuel resource and waste heat utilization, and greenhouse gas (GHG) emission credits.

SaskPower initiated a pilot program to determine the potential advantages and disadvantages of DG technologies that could provide clear environmental benefits. The program was designed to test various technologies, applications, business models, economic benefits and environmental impacts. Five technologies were chosen: photovoltaic (solar), wood gasification, flare gas, cogeneration and biogas.

As of the end of 2006, the DG demonstration program was drawing to a close. Two of the projects were decommissioned in 2005. Results of the remaining pilots as of the end of 2006 were as follows:

***i. 2.8-kW photovoltaic array:*** The photovoltaic array at the Saskatchewan Science Centre was installed in 2000. Results to date show that this technology is better suited for niche applications where connection to the grid is uneconomical or when passive solar enhancement is desired, as the cost savings resulted from the solar system cannot effectively offset the capital costs for the installation. For the purpose of scientific demonstration, this project will continue to be in operation.

***ii. 120-kW bio-digester power generating skid:*** This facility was placed into operation in 2004, converting intensive livestock manure into methane to power four 30-kW microturbines. Results from this pilot are under review; however, the project experienced reliability and economic viability issues. Two immediate problems were identified: the fuel quality did not meet all the requirements of the specification, and the generating equipment often failed. The project will be decommissioned in February 2007.

***iii. 600-kW wood gasification power generation unit:*** This project was not implemented due to technical difficulties associated with the gasifier.

A report detailing the lessons learned from the DG pilot program will be completed by the end of 2007.

**D) Energy conservation**

Presently, SaskPower is working with all customers — residential, agricultural, commercial and industrial — through a variety of energy conservation programs. Through these initiatives, we are lessening the environmental footprint of electricity production and use, while attempting to delay the need to build more high-cost electrical generation facilities. We're also helping customers save money by reducing operating expenses.

***i. Energy Performance Contracting (EPC):*** Our EPC Program, a component of SaskPower Energy Solutions, is an energy management service designed to help our larger customers reduce energy-related costs through the implementation of energy efficient upgrades. New equipment — along with technical conservation efforts — are implemented in existing facilities, with the savings from lower electricity, water and natural gas bills used to offset the retrofit costs.

The EPC Program provides a comprehensive service that includes:

- Facility audits to determine savings;
- Project engineering and design;
- Overall project management;
- Financing options and contract development;
- Staff/operator training and equipment commissioning;
- Measurement and verification of savings; and
- A savings guarantee backed by SaskPower and service partner Honeywell.

In 2006, the EPC Program focused on the development of new projects and introduced an additional program manager position in order to extend the reach of the service. SaskPower is working closely with the Saskatchewan Department of Health and several provincial health regions to expand the EPC service into this sector.

To date, the projects completed through the EPC Program have resulted in savings of:

- Over 23 million kWh in electricity consumption;
- Over 3.5 million cubic metres in natural gas consumption; and
- Over 2.5 million cubic metres of water.

Combined, the amount of fossil fuels and water saved through our EPC projects has contributed toward the reduction of over 28 million kilograms of harmful $CO_2$ emissions from the atmosphere, which results in environmental benefits equivalent to:

- Removing about 3,500 cars from the road;
- Unplugging over 18,000 refrigerators; or
- Planting about 5.5 million trees.

***ii. Power savings campaigns:*** In 2006, SaskPower continued to raise customer awareness about electricity conservation and efficiency, as well as the impact of electricity use on the environment. Information was delivered through the province's television and radio networks, as well as print publications.

Since major appliances account for approximately 37% of power use in an average Saskatchewan home, one of this year's campaigns focused on helping customers understand just how much old refrigerators cost to run. SaskPower launched its Ugly Old Fridge campaign in June, and held a contest to give away five new ENERGY STAR® qualified fridges. Campaign materials communicated that a fridge 15 years old or more costs over $100 a year to operate, while a new ENERGY STAR fridge costs less than $50 a year. By replacing their five old fridges with ENERGY STAR qualified fridges, contest winners reduced their greenhouse gas emissions by over four tonnes, which is similar to planting close to 1,000 fully grown trees. Public interest in the campaign was high, with over 4,500 people entering the contest.

In 2006, SaskPower also launched a campaign educating customers and employees about the benefits of using energy-efficient LED light strings during the holidays. LED light strings last up to 10 times longer than traditional lights, are safer, and use up to 95% less electricity.

During the year, SaskPower Customer Services representatives continued to deliver energy conservation messages by appearing at local trade shows. Staff shared information with customers on the power savings campaigns, SaskPower's GreenPower product and energy efficiency, while highlighting initiatives underway throughout the Corporation to minimize the environmental impact of operations.

***iii. Power savings tips and tools:*** This online service — available at saskpower.com — helps residential customers understand where their electricity dollars are going and learn how to conserve energy, reduce GHG emissions and save money on their power bills. In 2006, there were more than 31,000 visits to the site. During the year, the online cost calculator — an interactive tool that shows customers what it costs to run appliances and other home electrical items — was revised. Now customers can compare costs between electric and natural gas appliances, keep a running total of power costs and view or print a report summarizing the results.

SaskPower also launched an electronic newsletter called *PowerSavvy News*. The publication is designed to provide customers with information on how to reduce their electricity use. By the end of the year, almost 2,000 customers had subscribed to the newsletter.

***iv. Education:*** In order to raise awareness about climate change among customers and youth, SaskPower works in conjunction with a variety of partners. SaskPower Shand Greenhouse and SaskPower Environmental Programs continue to collaborate in delivering a school presentation about electrical production in Saskatchewan through the Energy and Environment Program.

Destination Conservation Saskatchewan (DCS) — delivered by the Saskatchewan Environmental Society — is also sponsored by SaskPower. DCS is a practical, student-driven environmental education program aimed at helping students and staff better understand the benefits of saving energy and water, as well as reducing waste. On their own, the educational services of DCS can provide schools with valuable education resources. However, schools benefit most if the program is integrated with technical services, such as SaskPower's EPC Program, to reduce energy consumption in schools.

Since becoming involved in SaskPower's EPC Program in 2005, several schools within the Sun West (formerly Rosetown) School Division have undergone upgrades to lighting, heating, cooling and ventilation systems. As a result, they are improving energy efficiency and reducing energy-related operating costs. Annually, these upgrades result in over $45,000 in energy and water savings and prevent more than 300,000 kilograms of $CO_2$ emissions.

Schools within the Living Sky (formerly LandsWest) School Division are also undergoing similar changes through an EPC project. Once fully implemented, the upgrades will result in annual savings of more than $69,000 and reduce $CO_2$ emissions by more than 350,000 kilograms every year.

More information on environmental achievements and challenges is available through saskpower.com.

## DEMAND SIDE MANAGEMENT (DSM)

DSM refers to activities undertaken by a utility to alter the consumption patterns of its custon ers. The intent is to help manage costs for both the utility and the customer. DSM programs involve planning, implementing, and monitoring activities that are designed to encourage customers to modify their level and pattern of electricity use. The desired outcome is to have a measurable effect on the supply plan. As a result, DSM assists in reducing the impact of electricity generation and energy use on the environment.

DSM activities can include energy conservation, energy efficiency, and any energy management program intended to modify customer load patterns. A utility will evaluate the potential for these programs based on their business value and the overall benefit for society. In general, cost-effective DSM activities are pursued in advance of other supply options.

DSM can be effective in offsetting a portion of load growth, but will likely not be able to replace retiring base-load generation. In order for DSM to be a true supply option, programs must provide real energy and capacity reductions that are permanent, measurable and verifiable. If reductions do not materialize, supply shortages could occur.

The long-term objective of all DSM planning should be to transform the market with permanent changes in energy-using technology and behaviour. These plans use a combination of consumer education, financial incentives for a limited period, as well as regulations and standards. SaskPower is currently evaluating a variety of DSM options and will incorporate specific initiatives into the supply mix that are cost-effective and provide a benefit to society.

## SMALL POWER PRODUCERS

As interest in environmentally responsible generation grows and technology to produce electricity on a small scale improves, more and more customers are investigating ways to generate their own electricity. SaskPower's Small Power Producers Policy accommodates customers who wish to generate up to 100 kW of electricity for the purpose of offsetting power that would otherwise be purchased from SaskPower. This policy applies to wind- and solar-powered facilities as well as other viable generating sources. Under the Small Power Producers Policy, SaskPower will purchase excess energy at the marginal price for that electricity.

The Alternative Farm Energy Solar- or Wind-Powered Livestock Water Pumping Incentive Program offers a grant equal to 50% of the cost above $500, to a maximum of $500, toward the purchase and installation of a solar- or wind-powered water pumping system for farm livestock. This assists producers who would otherwise have to run power lines to remote wells, dug-outs or streams.

Meanwhile, SaskPower is currently examining the potential for net metering and will release more details later in 2007. Net metering refers to the offsetting of electrical consumption by a customer against the same customer's production of electricity, typically from a small scale renewable energy source such as wind or solar.

To accomplish net metering, electricity is measured through either a certified bi-directional meter; a meter that has the capacity to measure delivered and received energy and records them separately; or through two meters, in which case one measures delivered energy and the other measures received energy. While net metering policies are generally well established in various parts of the United States, net metering is still relatively new in Canada.

## EMISSIONS

Burning fossil fuels to generate electricity affects the air we breathe. GHG atmospheric emissions are of great concern because they are the most difficult to manage. GHGs [$CO_2$, nitrogen oxides ($NO_x$), methane, water vapour and chlorofluorocarbons] are believed to be responsible for climate change. We are making progress in reducing emissions through generating efficiency improvements, adding cogeneration and green power to our generating mix, and investing in research on how to remove GHGs from emissions.

Our Emissions Control Research Facility (ECRF) at Poplar River Power Station is leading the way in SaskPower's development of new control technologies. Much of its focus is on exploring and developing mercury capture. However, the ECRF is also supporting our clean coal feasibility study and enhancement of particulate control technologies. In the meantime, we work closely with federal and provincial regulators to ensure that strict guidelines and standards for emissions are not exceeded.

In addition to feasibility studies into low or near-zero emissions clean coal and polygeneration projects, the Corporation remains active in a number of additional areas.

**A) Our research partners**

SaskPower plays a leading role in the Canadian Clean Power Coalition (CCPC), which has a mandate to research, develop and demonstrate commercially viable clean coal technology. Members include Canadian coal and coal-fired electricity producers, the California-based Electric Power Research Institute (EPRI), and Basin Electric Power Cooperative from North Dakota, for which a SaskPower employee has been seconded as executive director. The CCPC is facilitating a demonstration plant program that will lead to the design and construction of a clean coal technology power plant.

In addition, SaskPower is an industry partner in the International Energy Agency (IEA) GHG Weyburn $CO_2$ Monitoring and Storage Project. This joint research undertaking with the IEA and EnCana is a world-leading international study that involves injecting and storing $CO_2$ underground for enhanced oil recovery. To date, results demonstrate that the Weyburn field is highly suitable.

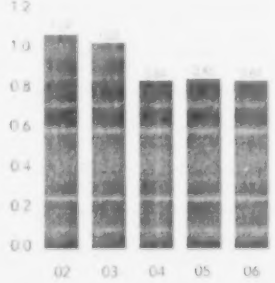
SaskPower is working closely with the University of Regina's International Test Centre (ITC), which develops technologies to reduce $CO_2$ emissions. The ITC is establishing Saskatchewan as a world leader in $CO_2$ capture technology, in part through a $5.2-million pre-commercial scale technology demonstration plant at SaskPower's Boundary Dam Power Station. SaskPower is also a participant in the Canada Centre for Mineral and Energy Technology (CANMET) $CO_2$ Consortium. Its objective is to advance an oxy-fuel process for the capture of $CO_2$.

In addition, SaskPower is a member of the Lignite Energy Council. This group includes utilities from North Dakota that burn coal similar in make-up to that used in our generating stations. The council supports the development of technologies that are designed to reduce emissions that result from burning coal.

**B) Mercury**

On October 11, 2006, the Canadian Council of Ministers of the Environment adopted a Canada Wide Standard (CWS) for mercury, which requires SaskPower to significantly reduce its mercury emissions by 2010. As part of the CWS process, all Canadian utilities agreed to determine the amount of mercury passing through power plants.

**Mass net $CO_2$ emitted per unit of net fossil generation** kg/kWh



SaskPower is playing a leading role as the only utility to have developed in-house capability for analyzing mercury in coal and ash streams. Under an independent quality control program, SaskPower has been recognized as having one of the most proficient labs for this kind of analysis — the ECRF houses continuous mercury analyzers at Operations Support in Regina — and receives numerous inquiries for advice regarding both kinds of mercury analysis.

We have been operating the ECRF at Poplar River Power Station since the fall of 2004, with much of the focus on exploring and developing technologies for mercury control. This work has attracted the involvement of other lignite-burning utilities and suppliers of mercury-control technologies. As a result, it has received funding support from agencies in Canada and the United States. In 2005, the potential for achieving effective mercury control was demonstrated.

In 2006, slipstream testing of activated carbon injection into high permeability fabric filter material and an electrostatic precipitator was done to address pressure drop issues encountered in previous tests that had achieved good mercury removal. Full-scale injection tests into an electrostatic precipitator are planned in 2007.

Compliance with new federal mercury regulations still requires a reliable method of monitoring mercury emissions. In order to conduct the work at the ECRF, SaskPower has already installed three continuous mercury analyzers that are considered the most advanced available. We are working with the equipment's manufacturer to improve its reliability so that it can be used for compliance monitoring. In addition to the ECRF, SaskPower is investing in a variety of research and development activities aimed at determining the most suitable way to control mercury emissions.

**C) Other emissions**

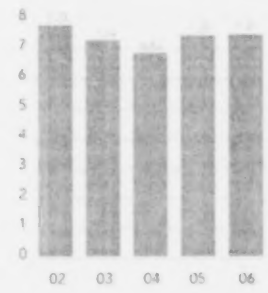
SaskPower is taking proactive steps to manage other emissions from our generating stations:

***i. Particulates:*** We continue to improve the efficiencies of electrostatic precipitators (ESPs) to ensure that the capture of flyash is within the design parameters, typically in the order of 96% to 99.5%. In 2006, significant reductions in particulate emissions at Poplar River Power Station Unit #2 were achieved during its major overhaul; further reductions are anticipated in 2007 as more particulate collection enhancements are incorporated. Similar improvements are expected for Unit #1 from work planned during its major overhaul in 2008.

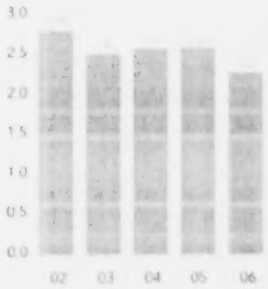
***ii. Sulphur dioxide ($SO_2$):*** SaskPower is currently conducting a multi-year project involving a series of significant mechanical improvements and upgrades. Once completed, process optimization and potentially more effective $SO_2$-control reagents will be studied. While the main driver for this work is to reduce our $SO_2$ emissions to well below regulatory limits, we are also examining options to achieve very low $SO_2$ concentrations in flue gas in order to accommodate effective $CO_2$ control.

***iii. Nitrogen oxides ($NO_x$):*** These emissions are produced by the combustion of fossil fuels, including coal. In general, SaskPower's $NO_x$ emissions are well within any regulatory limits; however, the Corporation has an ongoing program to investigate ways of achieving even lower emissions by modifying conditions under which coal is burned. SaskPower is also evaluating innovative $NO_x$ control technologies that have the potential to achieve very low $NO_x$ levels while avoiding most of the problems associated with conventional technologies.

**Mass net $SO_2$ emitted per unit of net fossil generation** (g/kWh)




**Mass net $NO_x$ emitted per unit of net fossil generation** (g/kWh)



**D) SaskPower offsets**

In the immediate future, SaskPower has elected not to pursue GHG credit trading. However, SaskPower has a number of unverified offsets which in 2006 totalled over 2.2 million tonnes. These include:

***i. Forest Carbon Sequestration Agreement — 2.2 million tonnes***

As a result of a partnership between SaskPower and Saskatchewan Environment initiated in 1999, this project offsets GHG emissions by establishing more than 500,000 hectares of forest carbon reserves and the planting of five million tree seedlings. The project received third party endorsement from the Greenhouse Emission Reduction Trading (GERT) Pilot in 2002. SaskPower began receiving these annual offsets in 2003; they will continue until 2012.

**2006 generation by fossil fuel**

Gas 11.28%
Coal 88.72%

***ii. Flyash — 94,030 tonnes***

Flyash is a fine ash that is a by-product of burning finely pulverized coal in thermal power stations. It is sold for use in ready mix concrete, mine backfill, oil well cementing, road base stabilization highway improvement and oil well site environmental applications. The flyash offsets assume that by selling flyash, we are offsetting the $CO_2$ produced in the course of cement manufacture.

***iii. GEMCo Norseman Landfill Gas Project — 1,665 tonnes***

Through the Greenhouse Emissions Management Consortium (GEMCo), SaskPower is contracting for GHG reductions resulting from a landfill gas capture project in Surrey, B.C. SaskPower began receiving these annual offsets in 2004; they will continue until 2013.

In addition to GHGs, SaskPower is also developing ways to offset other emissions. We are working with IPSCO and Wheat City Metals in Regina on a program that will see the mercury in automotive switches captured and recycled before cars are crushed. In 2006, SaskPower also launched a Mercury Thermostat Recycling Program to ensure the safe collection and recycling of mercury from old household thermostats. Our customers are increasingly buying new energy efficient thermostats to replace their older thermostats. Through this new program, SaskPower will ensure that the mercury from discarded thermostats is not released into our air, land and water. Though the amount of mercury found in the older household thermostats is relatively small, it can still be toxic to birds, fish, wildlife and humans. In 2006, 957 thermostats were collected.

## INTERNAL ENERGY EFFICIENCY

Three internal energy indicators measure the efficiency of the major phases of electricity delivery — generation, transmission and distribution. This essentially constitutes the amount of electricity used and/or lost in each of the phases. The energy conversion percentage for 2006 is consistent with past performance, and is within historical normal variables.

Activities in 2006 that improved energy efficiencies included:

**A) Fossil fuel generation**
One of the most reliable coal-fired units in North America — Poplar River Power Station Unit #2 — received a $130-million upgrade. The major rebuild and refurbishment is resulting in increased internal unit efficiency, improved availability, ensured capacity, reduced particulate emissions and increased life expectancy. A $140-million upgrade to Unit #1 is scheduled for completion in 2008.

**B) Renewable generation**
Construction of the 150-MW Centennial Wind Power Facility was completed and the project was officially commissioned.

| Internal energy efficiency — % | | 2006 | 2005 | 2004 | 2003 | 2002 |
|---|---|---|---|---|---|---|
| | **Generation** | **94.7** | 94.5 | 94.1 | 94.6 | 93.6 |
| | **Transmission** | **95.4** | 95.8 | 95.5 | 95.8 | 95.2 |
| | **Distribution** | **95.0** | 95.4 | 95.0 | 95.3 | 94.8 |

## FLYASH

Flyash is a by-product of burned coal from SaskPower's Boundary Dam, Shand and Poplar River Power Stations. Our subsidiary, SaskPower International, currently sells flyash from the Boundary Dam and Shand Power Stations. SaskPower International has marketed flyash in Saskatchewan and Manitoba since the fall of 1994; however, SaskPower has been selling flyash since the 1960s.

About 20% of the total ash produced at our coal-fired stations is a coarse slag-like material that is not marketable. The remaining 80% is flyash, a fine powdery substance. SaskPower International sells approximately 16% of all the flyash produced by the Boundary Dam and Shand Power Stations. As part of SaskPower International's ongoing marketing efforts, it continues to investigate new sources of flyash, such as the Poplar River Power Station and the potential Clean Coal Project, which will allow it to meet increasing demand and potentially expand into new markets.

# A COMMITMENT TO PROTECTION

## SCREENINGS, ASSESSMENTS AND PROJECT APPROVALS

As part of our Environmental Management System (EMS), and to ensure compliance with all legislative requirements, SaskPower continually conducts internal screening of generation, transmission and distribution projects. If there is any probability that environmentally sensitive lands, habitats, species, or archaeological sites may be affected by development, project plans are submitted to SaskPower's Environmental Programs department for a detailed assessment. The assessment may determine that legal approvals and permits are required, a field inspection may be required, an environmental protection plan must be implemented, or other actions are necessary. In 2006, 494 projects were referred to Environmental Programs.

Project referrals and field assessments

| | Referrals | | | | | Assessments | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **2006** | 2005 | 2004 | 2003 | 2002 | **2006** | 2005 | 2004 | 2003 | 2002 |
| **Generation** | **1** | 0 | 2 | 3 | 2 | **2*** | 2* | 4* | 2 | 3 |
| **Transmission** | **16** | 9 | 2 | 8 | 9 | **5*** | 3* | 8* | 10* | 13 |
| **Distribution** | **465** | 526 | 383 | 326 | 299 | **70*** | 62* | 38* | 37* | 45 |
| **Fibre optic** | **4** | — | — | — | — | **5** | — | — | — | — |
| **Other** | **8** | 11 | 5 | 0 | 0 | **0** | 7 | 3 | 0 | 0 |
| **Total** | **494** | 546 | 392 | 337 | 310 | **82** | 74* | 53* | 49* | 61 |

*Included fieldwork conducted in 2006 for projects referred to Environmental Programs in previous years.

## MAJOR PROJECT SCREENING

In 2006, Environmental Programs participated in a variety of SaskPower major projects:

**A) 150-megawatt (MW) Centennial Wind Power Facility**
As a condition of federal environmental approval of the Centennial Wind Power Project, a mortality study of bird and bat impacts was required. The study began early in 2006 and will conclude in the fall of 2007.

**B) ML3 Stage 4 transmission line**
Construction of this transmission line rebuild was completed in the first quarter of 2006. Due to wet conditions in the area, clean-up was not feasible until the beginning of July. A small area of provincial Crown pasture was reclaimed in the fall with a tame pasture seed. A bird strike study commenced at the beginning of September and

will continue for two years. As only one season of data has been collected thus far, it is too early to assess the results. An archaeological post-impact assessment on a section of the line passing through the St. Cyr Hills was conducted, and it was determined that no heritage sites were impacted by construction.

C) **Island Falls-Pelican Narrows transmission line**
Above-average water levels in the northern part of the province continued to hinder the construction of this transmission line. The last aspects of line construction were completed slowly as conditions allowed. Clean-up for this line is still outstanding, however the crew was able to complete some work prior to snowfall. The remaining clean-up will be assessed once the snow is off the ground in 2007. Based on current assessments of the line, it appears that environmental impacts have been few and well managed.

D) **Fibre optic installations**
Throughout 2005 and 2006 SaskPower installed eight fibre optic lines, totalling a distance of 1,008 kilometres, in various locations in the province. These installations were part of a SaskPower project that will upgrade our mobile communications dispatch radio system, which is expected to become fully operational in 2008. All installed fibres are now carrying operational communications signals. It is anticipated one more fibre optic line will be installed in 2008 as part of an initiative to provide alternate communications routes. This project is not part of the radio project. Both projects come over a decade after the previous major underground fibre optic installation by SaskPower (Pasqua to Queen Elizabeth). After a difficult beginning in 2005 due to a significant number of environmental concerns, construction in 2006 went very smoothly with close to no environmental impacts. Small areas of reclamation have been required in some native or near-native provincial Crown lands. This reclamation, for the most part, involves reseeding with a locally occurring seed mixture.

## SITE ASSESSMENTS

SaskPower conducts site assessments prior to the sale, purchase or lease of property, or as a result of investigations indicating the potential for contamination. If necessary, we initiate site remediation after the assessment has been completed.

A) **Pinehouse Generating Station**
A Phase II Environmental Site Assessment was conducted in 2006 at the location of a former diesel-fuelled generating station in the northern village of Pinehouse. Petroleum hydrocarbon impacts were identified in the subsurface soil and groundwater. Metal impacts were also identified in one area of the surface soil. An additional assessment was initiated to better define the impacts and to gather information for clean-up plan development.

B) **Saskatoon service centre**
SaskPower moved its Saskatoon service centre operations to a new site in 2004. Phase I and II Environmental Site Assessments of the vacated site were completed in 2006. Petroleum hydrocarbon impacts were identified in one area and delineated. Remediation of the impacted area is planned for 2007.

C) **Steelman 72-25 kilovolt (kV) substation**
The substation was rebuilt in 2005. Prior to the rebuild, a site assessment identified concentrations of petroleum hydrocarbons in the surface soil that exceeded criteria. The contaminated soil was removed in 2005 and 2006 according to the clean-up plan approved by Saskatchewan Environment.

D) **Biggar warehouse**
This location was the site of a diesel-fuelled generating station prior to its use as a SaskPower warehouse. A Phase II Environmental Site Assessment was initiated in 2006. Subsurface petroleum hydrocarbon soil contamination was identified on the property and on a neighbouring property. Remediation options will be investigated in 2007.

E) **Regina Powerhouse substation**
SaskPower plans to release some land at the Regina Powerhouse substation for use as parkland within Regina's Wascana Centre. Assessment started in 2004 and continued in 2006. The most recent work focussed on delineating concentrations of polychlorinated biphenyls (PCBs) identified in the surface soil within a fenced compound. Plans are to remove this soil in 2007 and dispose of it appropriately.

F) **Regina Lakeview substation**
A partial site assessment was conducted in 2006 in conjunction with the removal of a building. Elevated concentrations of petroleum hydrocarbons were identified in the soil near the building. In 2006, some of the impacted soil was removed. However, it was not practical to remove the impacted soil in and around the buried electrical infrastructure. Plans are to remove the remaining impacted soil upon decommissioning of either the substation or buried electrical infrastructure.

G) **Sturgis service centre**
SaskPower leased the service centre from 1990 to 2005. In 2005, an environmental assessment identified surface soil contaminated with petroleum hydrocarbons. The impacted soil was excavated and temporarily stored until 2006 when it was placed in the Town of Sturgis' landfill for treatment with approval from the town and Saskatchewan Environment.

H) **Rosthern district service building**
A Phase II Environmental Site Assessment conducted at this location in 2004 identified approximately 1,500 cubic metres of soil contaminated with petroleum hydrocarbons. A number of environmental consultants were approached in 2005 regarding the potential for bioremediation, but the response was limited. As the contamination in the soil is adjacent to Rosthern Creek, federal officials were approached to identify their concerns, particularly with respect to fisheries. In 2006, Environment Canada suggested that additional investigation should be conducted in order to define the potential risk to fish-bearing waters.

I) **Lanigan district office**
The district office was vacated in the summer of 2006. A site assessment identified elevated concentrations of petroleum hydrocarbons, lead and zinc. Review of the options for clean-up of the site is planned for 2007.

J) **Other assessments**
Six properties were assessed prior to being released for sale, including substations and vacant land. Soil samples were collected at four of the properties. The samples were analyzed for PCBs, petroleum hydrocarbons and metals. At some of the substations, wipe samples were collected from the transformer pads for PCB analysis.

In addition, 23 properties were assessed prior to finalizing the purchase or lease agreements. Three other assessments were completed related to new construction on existing SaskPower property or decommissioning activities on properties that are to be retained by SaskPower.

## SPILLS

Current legislation requires that spills of hazardous substances be reported to the regulatory authorities. Legislation defines a spill by type, volume and location. SaskPower had 14 reportable spills in 2006. The impact of 11 spills was either negligible or mitigated as appropriate. However, three relatively large oil spills occurred at SaskPower facilities; assessment and mitigation are pending at these locations.

Number of reportable spills

| | 2006 | 2005 | 2004 | 2003 | 2002 |
|---|---|---|---|---|---|
| **Oil spills** | **12** | 7 | 6 | 5 | 10 |
| **PCB contaminated oil spills (≥ 5ppm)** | **2** | 2 | 6 | 5 | 7 |
| **Other spills** | **0** | 6 | 5 | 4 | 5 |
| **Total spills** | **14** | 15 | 17 | 14 | 22 |

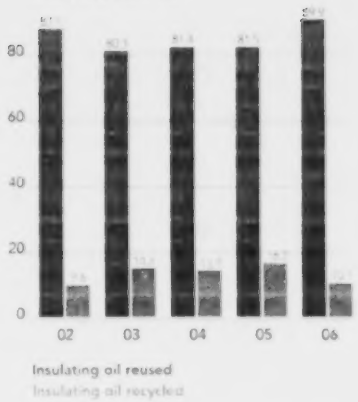
## PCB MANAGEMENT

PCBs were used by the electrical utility industry as cooling and insulating fluids in some types of electrical equipment. Today, they remain present as a contaminant in varying concentrations in some of SaskPower's equipment. Due to potential adverse effects if released into the environment, SaskPower uses special handling, storage and disposal measures when dealing with PCB-contaminated equipment.

## INSULATING OIL

Mineral oil is used as an insulator and coolant in virtually all of SaskPower's transformers and in many other types of electrical apparatuses. The Corporation reuses much of this insulating oil.

**Insulating oil reused and recycled** (%)




## VEGETATION MANAGEMENT

SaskPower uses an integrated approach to vegetation management that combines an understanding of plant ecology with a wide range of tools to manage vegetation in an effective, economical and environmentally responsible manner. This method is especially important as we work to maintain safe vegetation levels along power line rights-of-way of more than 155,000 kilometres of transmission and distribution lines. These corridors can vary in width from 10-70 metres, depending on the size of the power line and height of surrounding vegetation.

SaskPower's Vegetation Management Policy ensures that vegetation will be dealt with in a manner that:

1. Uses an ecological approach;
2. Is cost-effective;
3. Considers community values in establishing standards of maintenance for SaskPower properties;
4. Receives landowner consent;
5. Uses herbicides responsibly; and
6. Complies with SaskPower's Environmental Policy and all relevant federal and provincial legislation.

The Vegetation Management Policy includes a number of methods for controlling plant species in transmission and distribution line rights-of-way, while encouraging the establishment of plant species that provide important wildlife habitat. Options used by the Corporation include mechanical methods, using seeded and naturally occurring native vegetation, as well as selective herbicide use. Because of the lower long-term costs associated with an integrated approach, this policy brings economic as well as environmental benefits.

By using integrated vegetation management practices to promote the development of low-growing vegetation, SaskPower reduces the possibility of branches falling across a line, which can cause damage and interrupt electrical service. In forested areas, trees coming into contact with high voltage lines could cause forest fires. As in previous years, in 2006 SaskPower continued to work cooperatively with rural municipalities and individual landowners to maintain a database of organic growers across Saskatchewan, which tracks landowners who have chosen not to have herbicides used in power line rights-of-way that are adjacent to their land.

In Saskatchewan, trees coming in contact with power lines cause approximately 1,000 outages a year. Development is underway on a Plant the Right Tree in the Right Place campaign that will share information with SaskPower customers on safe ways to incorporate trees into landscaping near power lines.

## ZERO G

Since 1993, the Zero G Waste Management and Resource Recovery Program has helped focus SaskPower employees on our goal of zero garbage. This comprehensive program is in place at the Corporation's offices and facilities across Saskatchewan. One of the main components is our corporate paper and cardboard recycling program. During 2006, SaskPower recycled over 100,000 kilograms of waste paper and cardboard from our facilities in southern Saskatchewan.

Historically, SaskPower found that many of the items used in its operations were not included in existing recycling programs. As a result, whenever possible we have responded by developing new recycling programs, either on our own or in partnership with other organizations. Today, Zero G includes recycling programs for materials as diverse as aerosol cans, oily rags, used oil, solvents, antifreeze, batteries, printer cartridges, phone books, plastic bags, metals and streetlight bulbs. Waste audits — another key element of the program — are conducted at SaskPower facilities each year to help identify new waste recovery opportunities and to ensure that effective waste diversion methods are in place. Plans are underway for a pilot project that would see fluorescent light tubes collected for recycling.

SaskPower is also taking Zero G to the community and raising awareness about the importance of waste reduction through a number of initiatives:

**A) Clean Team**
A unique partnership between SaskPower and the Saskatchewan Association of Agricultural Societies and Exhibitions (SAASE) resulted in the establishment of the Clean Team. This program helps local community groups across Saskatchewan address waste management and disposal on fair grounds. Additional benefits include waste reduction at local landfills, revenues for local non-profit groups through honoraria and recycling proceeds, as well as year-round access to SaskPower recycle and refuse bins at exhibition facilities. In 2006, 23,576 bags of trash were collected and 2,597 bags of recyclables were diverted from landfills.

**B) Saskatchewan Waste Reduction Council**
SaskPower supplies financial support to this organization that delivers public education initiatives, particularly during Waste Reduction Week each fall. In 2006, SaskPower and SAASE were presented with the Partnership Award at the council's 2006 Waste Minimization Awards for their work on the Clean Team.

**C) thINK FOOD**
SaskPower continues to join the Regina and District Food Bank in the thINK FOOD program, which recycles laser and inkjet cartridges from the Corporation's offices as part of a Canada-wide initiative. The program also raises much-needed funds for Saskatchewan food banks.

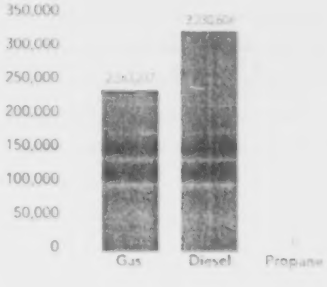
**D) Head office waste audit**
Grade five students from St. Catherine School in Regina assisted with an annual waste audit at SaskPower's head office in June 2006, giving participating youth first-hand knowledge of the environmental benefits that come from recycling and waste diversion.

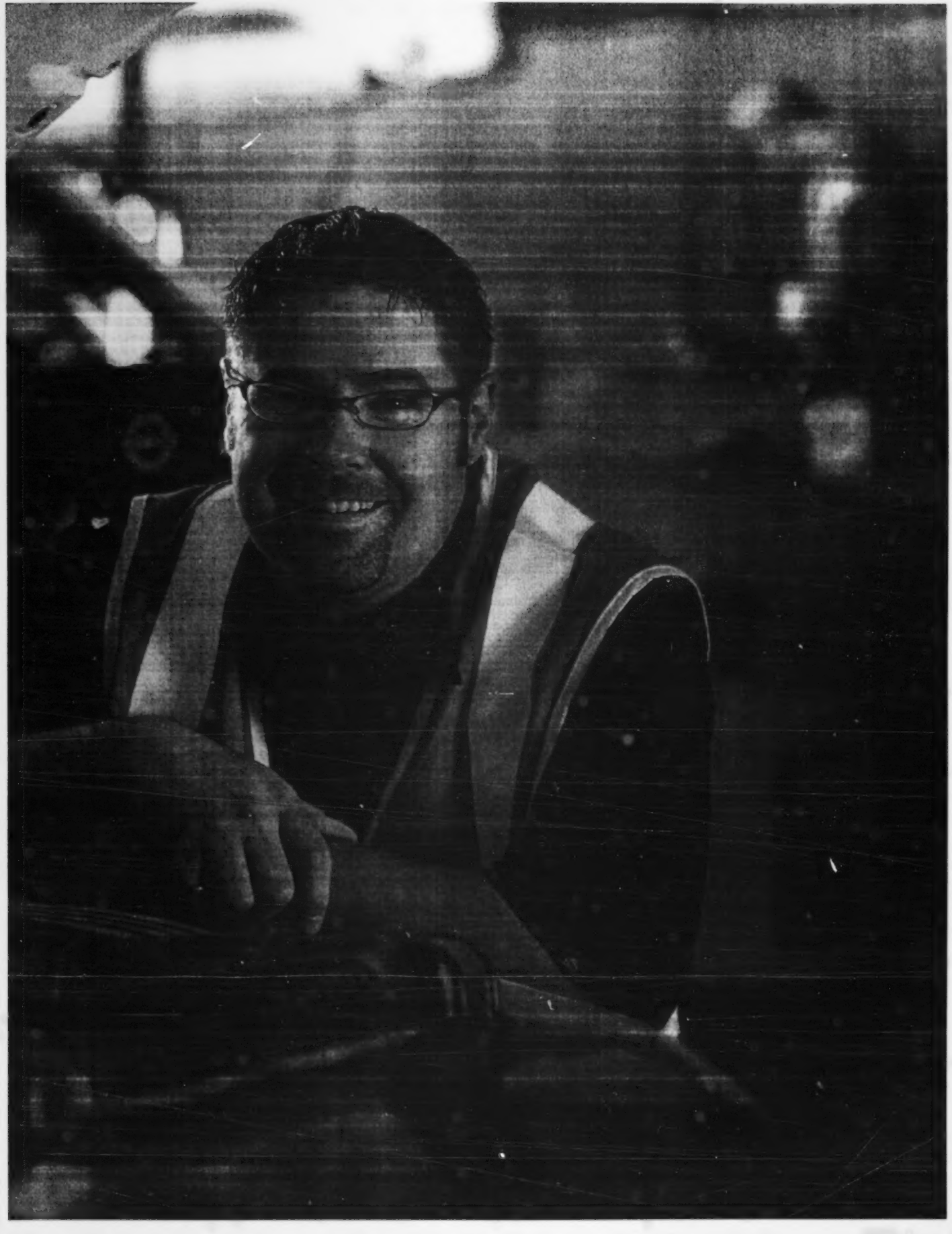
## TRANSPORTATION MANAGEMENT

Our Fleet Services area is researching environmental advances in fleet-related technologies and management methodologies. In 2004, SaskPower added three hybrid trucks to our fleet for testing over a three-year period. The project will gather data on the effectiveness of hybrids in a variety of Saskatchewan work settings, including city and highway uses. The lease terminates in May 2007, at which time analysis of data will be required to evaluate the effectiveness of this technology compared to conventional applications in SaskPower's fleet.

Fleet Services continually monitors the performance of our entire gasoline and diesel fleet, with a focus on our light-duty vehicles. To date, current trends and experience indicate that our diesel and gasoline units have similar fuel economies when averaged over applications, ages of assets and engine displacements. While diesel units have a marginally smaller fuel cost per litre than gasoline units, their repair costs are trending upwards as these assets age (based on current performance).

**2006 fuel consumption by vehicle fleet** (litres)





## PROCUREMENT

The environmental implications of the procurement of goods and services are an integral part of all decision making at SaskPower. Corporate guidelines help ensure that environmentally appropriate products are acquired. As well, contractors providing goods or services to SaskPower must meet the requirements of our EMS.

## ELECTRIC AND MAGNETIC FIELDS (EMF)

EMF are found wherever there is electricity. Acknowledging and addressing concerns about EMF is an important part of SaskPower's commitment to customers. International health agencies and a large number of independent scientific bodies have been unable to establish from research that there is a health risk due to exposure. Scientists and health agencies, however, agree that more research is required to fully resolve the complex technical questions associated with the issue.

SaskPower continually monitors research into the possible biological and health effects associated with the fields created by electrical facilities to determine whether EMF are in fact harmful. As a member of the Canadian Electricity Association (CEA), we closely follow EMF research conducted by universities, government and other scientific bodies. SaskPower also designs and operates electrical generation, transmission and distribution systems to comply with recognized standards, including those issued by the Canadian Standards Association.

Our company believes acknowledging and addressing concerns regarding EMF is important and we continue to share information with customers. Our commitment to the issue of EMF includes the following measures:

1. To support employee and public education on EMF;
2. Upon request, to provide EMF measurements in and around residential, commercial and public buildings as well as SaskPower facilities, and provide typical EMF readings for common types of electrical equipment;
3. To provide estimates of EMF levels for proposed SaskPower electrical facilities;
4. To cooperate fully with regulatory agencies established by federal and provincial governments and other electrical utilities to review or consider limits on EMF exposure; and
5. To participate in communication forums and regulatory proceedings to remain current on all EMF-related issues.

## SASKPOWER SHAND GREENHOUSE

Since 1991, SaskPower Shand Greenhouse has been using waste heat from the nearby Shand Power Station to grow millions of tree, shrub and grass seedlings that are being provided to the community for use in land reclamation and other environmental planting projects. By the spring of 2006, over 5.3 million seedlings had been distributed.

Educational activities are equally important at SaskPower Shand Greenhouse. Efforts to educate energy consumers about the impacts of their choices are anchored by the Energy and Environment Program. It features a poster contest, classroom presentations, environmental workbooks and, in the pilot stages of development, an e-Clips video contest for high school students. The poster contest invites grades five and six students from across the province to create posters with an environmental theme. The objective is to demonstrate how we can incorporate responsible environmental choices into our daily lives and take action against climate change. In 2006, SaskPower received 759 submissions from students at 51 Saskatchewan schools. About 75% of posters were from rural classrooms and and the remainder from urban centres. The Energy and Environment Program combined with regular and school tours to reach an estimated 4,100 students in 2006.

## A COMMUNITY EFFORT

We value the opportunity to join community groups in protecting natural spaces. In 2006, SaskPower initiated or continued a number of important alliances:

**A) Old Man on His Back Prairie and Heritage Conservation Area**

SaskPower is partnering with the Nature Conservancy of Canada to conserve more than 5,300 hectares of native prairie grassland in southwestern Saskatchewan at the Old Man on His Back Prairie and Heritage Conservation Area. This region of the Cypress Uplands is one of the best remaining examples of native prairie in the province and is home to several species at risk, including the burrowing owl, swift fox and ferruginous hawk. The area also has significant heritage value, containing medicine wheels, tipi rings and other First Nations artifacts. A new interpretive centre opened in 2006.

**B) Ducks Unlimited Canada (DUC)**

Through the Diamond Legacy Sponsorship, SaskPower contributes approximately $115,000 annually to DUC in support of initiatives designed to assist the conservation of ducks, migratory birds and their habitats. In 2006, the sponsorship was directed to three programs:

***i. Habitat Securement-Conservation Easement Program:*** This conservation easement program is a voluntary legal agreement between a landowner and DUC. It is intended to preserve the natural integrity of the land by limiting the amount and type of development that can occur on the property in the future. This program is designed to protect lands that are located in areas of good waterfowl reproduction where habitat loss is occurring. The program has targeted at-risk native upland and associated wetland habitats. In 2006, 430 acres in the Allan/Dana Hills area and 500 acres in the Missouri Coteau area were secured with the assistance of SaskPower funds.

***ii. Saskatchewan Wetland Education Program:*** This program reached over 5,500 children and 700 adults in 312 classrooms/field trip presentations in 2006. Since the program began in 1999-2000, SaskPower funding to DUC has helped provide learning opportunities to over 53,200 children and 5,730 adults. SaskPower sponsorship of the program has also allowed for the development of wetland and field resource materials for teachers, as well as the production of interpretive material for existing DUC projects.

***iii. Habitat Restoration Program (Sunrise Cattle Corporation Community Herd):*** In east central Saskatchewan, a group of 11 producers have pooled their resources to establish a community herd. The proposed project includes 4,160 acres of land, including 2,560 acres with the Keeseekoose First Nation. In 2006, 1,325 acres of land were converted into perennial cover for haying or grazing, while 24 acres that contained 28 previously drained wetlands were restored to their original state. The lands will provide nesting cover and habitat for wildlife, as well as water for livestock.

**C) Native Plant Society of Saskatchewan (NPSS)**

In 2006, SaskPower entered the third year of a five-year financial commitment to the NPSS in support of the Regina Plain Seed Nursery, which provides seed for prairie restoration projects. The 2.2-million-acre Regina Plain, which includes the cities of Regina, Moose Jaw and Weyburn, is the target for these projects. In October, students from Grant Road School in Regina planted native prairie seed provided by the NPSS in a prepared restoration site in the school yard.

**D) Nature Saskatchewan**

SaskPower partners with Nature Saskatchewan in natural heritage education and conservation through both the Stewards of Saskatchewan (SOS) and PlantWatch programs. SOS works to address habitat concerns through landowner stewardship with three flagship programs: Operation Burrowing Owl, Shrubs for Shrikes, and Rare Plant Rescue. PlantWatch is a Canada-wide network of volunteers who record the blooming times for common plant species in their provinces and report these dates to researchers in order to measure the effects of climate change.

**E) Western Hemisphere Shorebird Reserve Network**

The Quill Lakes area in east central Saskatchewan is one of the continent's most important inland water bodies for migratory birds. The area provides habitat for endangered and uncommon species like the peregrine falcon, ferruginous hawk, Baird's sparrow and whooping crane. It is particularly important as a stopover and nesting site for the endangered piping plover.

When granted Western Hemisphere Shorebird Reserve Network status in 1994, a habitat development project was initiated for the Quill Lakes area. SaskPower contributes solar-powered water pumps to four rangeland pastures every summer, which allow shoreline habitat to be fenced from neighbouring cattle. This has proven critical to the project's success. SaskPower also reduced the possibility of birds striking power lines by not building distribution lines in the area.

**F) Saskatchewan Parks and Recreation Association (SPRA)**

SaskPower is the provincial title sponsor of the Communities in Bloom program, a Canadian beautification program that provides information, education and awards for achievement in floral displays, urban forestry, community involvement, landscapes, heritage conservation and environmental awareness. In Canada, Communities in Bloom has grown from 29 municipalities in 1995 to a program that now involves hundreds of communities, including 26 in Saskatchewan in 2006.

## WOOD POLE PROJECT

An Industrial Treated Wood Users Guidance Document (UGD), developed under the auspices of Environment Canada (EC), was distributed to all industrial users of treated wood in 2005. The recommendations contained in the UGD are designed to minimize releases of specific wood preservative chemicals. Where applicable, SaskPower is incorporating the UGD recommendations into our existing practices. We will also be reporting — through the CEA — our progress in implementing the recommendations. There are an estimated 1.5 million treated wood poles presently in service in Saskatchewan.

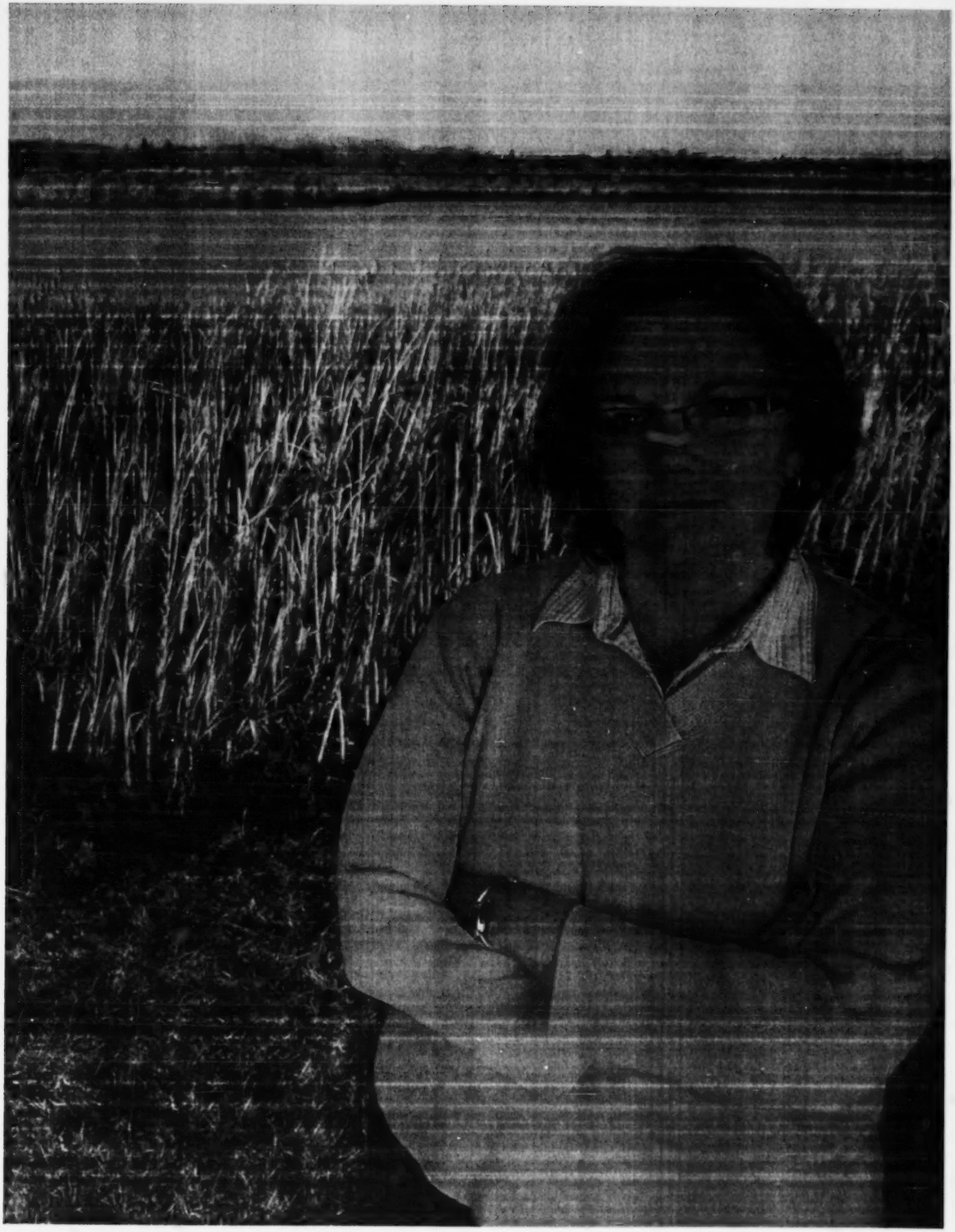
## *SPECIES AT RISK ACT (SARA)*

As a member of the CEA, SaskPower has been active in providing input into national policy development related to the implementation of the federal *Species at Risk Act*. Several meetings were held with regulators in 2006 to discuss concerns around *SARA* implementation and possible solutions. This dialogue is ongoing.

We continue our work with piping plovers, which is the *SARA*-listed species of most immediate concern to SaskPower. An estimated 6,000 piping plovers remain in the world. SaskPower is a member of the Prairie Piping Plover Recovery Team and is involved with conservation efforts at Lake Diefenbaker through sponsorship of Nature Saskatchewan's Piping Plover Guardian Program. In addition, SaskPower participated in the 2006 international census by surveying Cookson Reservoir, which supplies water to Poplar River Power Station. Several birds were found at this location.

## *MIGRATORY BIRD CONVENTION ACT (MBCA)*

In 2006, as lead for the CEA on incidental take regulation discussions with EC, SaskPower provided input into regulatory development. This input included a discussion paper on principles for regulations and information on electricity industry activities related to the protection of migratory birds.



## WORKING IN PARTNERSHIP

### REGULATORY COMPLIANCE

SaskPower continues to work closely with Fisheries and Oceans Canada (DFO) and other agencies to investigate fish and fish habitat issues that may be of concern as a result of hydropeaking at E.B. Campbell Hydroelectric Station. Fieldwork that began in 2004 was completed in 2006 to support an aquatic assessment research project downstream of the power station. The purpose of this joint research project is to develop potential scenarios for the station that balance the protection of fish and fish habitat with the generation of hydroelectric power.

During the year, work began using the River2D hydraulic model. Using data collected in previous years, fish habitat is being mapped along a 40-kilometre reach of river downstream of the station. This will outline how the use of fish habitat changes with variations in flow from the station; this work will be completed by summer 2007. The results of the research may suggest adjustments to flow from the station that will result in habitat improvements for fish downstream of the facility.

Meanwhile, SaskPower continues to work as part of a committee including DFO, Saskatchewan Environment, and the Saskatchewan Watershed Authority (SWA) to identify and resolve potential *Fisheries Act* issues at our company's facilities. In 2006, the committee continued its work on an agreement among all parties, identified and prioritized issues, compiled a bibliography of existing literature, and began to identify potential actions.

SaskPower continues its engagement with the Canadian Electricity Association (CEA) as it moves forward in developing a compliance framework with DFO under a Memorandum of Understanding. In 2006, progress continued on the development of the interpretation bulletin on fish passage. These documents, consistent with the federal government's Smart Regulation agenda, will assist in bringing consistency and clarity to the application of the *Fisheries Act* nationally as it is applied to hydroelectric facilities. In addition, the CEA continues to work with DFO on clarifying a policy around the application of the *Fisheries Act* with existing facilities.

### STURGEON

The lake sturgeon is the largest freshwater fish in Canada. It can grow to more than two metres in length and weigh more than 140 kilograms. These slow-maturing fish have been known to live more than 150 years. With an outer armour of bony plates, bones made of cartilage and a shark-like tail, sturgeon resemble fossils from the Upper Cretaceous period more than 100 million years ago.

The Saskatchewan River is an important spawning ground for sturgeon, but their numbers in the stretch of the Saskatchewan River between the E.B. Campbell Station and Manitoba Hydro's Grand Rapids Generating Station have declined dramatically since the 1960s. Factors contributing to their decline include over-harvesting, loss and fragmentation of habitat, changes in the hydrological regime, and changes in water quality.

SaskPower is a founding member of and a current participant on the Saskatchewan River Sturgeon Management Board. Its mandate is to prevent the further decline of lake sturgeon in the Saskatchewan River downstream of E.B. Campbell Hydroelectric Station. In 2006, SaskPower provided sponsorship to the Sturgeon Index Fishing Program involving Cumberland House fishermen, as well as funding for the development of an educational website.

## CONSTRUCTED WETLAND

Free educational tours of constructed wetland, led by SaskPower staff, allow visitors to learn more about this natural purification process. The SaskPower constructed wetland, built in 1994 near the Estevan sewage lagoons, is one of the largest of its kind in Canada. It was one of the first in North America to provide cooling water to a power station, meeting up to 40% of Shand Power Station's annual cooling water requirements. This environmentally friendly source of cooling water is cost-efficient and requires little maintenance.

The wetland also purifies the City of Estevan's secondary sewage wastewater and eliminates the need for semi-annual releases of Estevan's lagoons to the environment. In conjunction with the wetland, the adjacent 117-hectare duck pond provides a marsh habitat for various wildlife and migrating waterfowl to nest each spring.

## ZEBRA MUSSELS

Zebra mussels are an invasive species that can damage ecosystems and water intake structures. In 2006, SaskPower undertook educational activities to alert the public about the dangers of zebra mussels in order to prevent their spread into Saskatchewan waters. This includes the distribution of information brochures in parks and resort communities around the province.

# PUBLIC ACCOUNTABILITY AND REPORTING

## CONSULTATION

Engaging in two-way dialogue with our customers and communities reflects the corporate values of SaskPower: "Respect, integrity and openness in all we do." We consult with a wide variety of stakeholders on a diverse range of environmental issues. When we are beginning work to construct a new facility or improve an existing one, public involvement is central to our efforts.

Our programs typically include early contact with local officials, distribution of detailed project information, open house sessions, meetings with individuals and interest groups, media releases, advertisements, and direct correspondence and discussion. Results of public participation programs are frequently included in project application and approval processes that are filed with regulators. SaskPower also tracks external inquiries in our Environmental Management System (EMS).

Outside of our formal public consultation process, SaskPower maintains ongoing dialogue with a wide variety of key stakeholders, including: Saskatchewan Environment; Saskatchewan Industry and Resources; Fisheries and Oceans Canada (DFO); Saskatchewan Environmental Society; the provincial Office of Energy Conservation; and the Canadian Electricity Association (CEA). In addition, we maintain ongoing dialogue with stakeholders in centres where we conduct operations.

### REPORTING ON OUR ACTIVITIES

Communicating in an open and transparent fashion with our stakeholders, shareholders and customers is critical as we strive to maintain relationships characterized by trust. SaskPower reports on environmental activities in such a way that our efforts can be judged against past performance, and also compared on an equal footing with efforts by corporations in other jurisdictions. Current commitments include:

1. Reporting annually to our customers, shareholder and stakeholders through this Environment Report;
2. Filing an annual Environmental Commitment and Responsibility Program report with the CEA;
3. Participating in the compilation of the Saskatchewan State of the Environment Report;
4. Reporting annual greenhouse gas emissions to Statistics Canada; and
5. Reporting corporate environmental expenditures to Statistics Canada.

## CANADIAN ELECTRICITY ASSOCIATION (CEA) ENVIRONMENTAL COMMITMENT AND RESPONSIBILITY (ECR) PROGRAM

The CEA ECR Program reports industry-wide on efficiencies (on a 3-year reporting cycle — not reported this year) and environmental impacts. CEA ECR Program data for 2006 was not available at the time of printing.

| | 2006 | 2005 | | 2004 | | 2003 | | 2002 | |
|---|---|---|---|---|---|---|---|---|---|
| | **SaskPower** | CEA | SaskPower | CEA | SaskPower | CEA | SaskPower | CEA | SaskPower |
| Mass net carbon dioxide emitted per unit of net fossil generation (kg/kWh) [A] | **0.84** | 0.91 | 0.85 | 0.93 | 0.84 | 0.95 | 1.03 | 0.89 | 1.07 |
| Mass net sulphur dioxide emitted per unit of net fossil generation (g/kWh) [A] | **7.41** | 4.39 | 7.39 | 4.96 | 6.82 | 4.91 | 7.24 | 4.88 | 7.73 |
| Mass net nitrogen oxides emitted per unit of net fossil generation (g/kWh) [A] | **2.27** | 1.64 | 2.58 | 1.77 | 2.57 | 1.84 | 2.50 | 1.79 | 2.79 |
| Mass net mercury emitted per unit of net fossil generation (kg/TWh) [B] | **42.41** | - | - | - | - | - | - | - | - |
| Reportable spills [C] | **14** | 526 | 15 | 597 | 23 | 1,100 | 14 | 1,173 | 22 |
| Priority spills [C, D] | **2** | 76 | 0 | 83 | 2 | 70 | 1 | 82 | 2 |
| PCB in storage [C, E] (tonnes) | | | | | | | | | |
| *High level* | **0** | 45.6 | 0 | 27.5 | 0 | 44 | 1 | 55.3 | 2 |
| *Low level* | **5** | 442.5 | 1 | 374.6 | 1 | 806 | 13 | 1,014 | 31 |
| PCB sent for destruction (tonnes) [C] | | | | | | | | | |
| *High and low level* | **8** | 1373.5 | 9 | 1,079.5 | 30 | 1,678.6 | 42 | 733.8 | 38 |

A Includes 100% of emissions from Cory Cogeneration Station in 2006.

B New ECR Program indicator in 2006.

C The data reported through the ECR Program for reportable and priority spills, as well as PCBs in storage and sent for destruction, are representative of the overall totals of all Canadian utilities (including SaskPower) that have been participating in this industry-wide program. ECR criteria for reportable spills differ from the definition of reportable spills included in provincial legislation. Data meeting provincial criteria is found on page 20.

D In compliance with the CEA ECR Program reporting guidelines, a priority spill is one involving a substance that is a petroleum product or PCB-contaminated, and either one of the following: a spill with a volume greater than 500 litres or a spilled substance that enters a water body.

E According to the ECR Program guidelines, high level PCB material is defined as any material (including equipment) with a PCB concentration greater than 1% (10,000 ppm); low level PCB material is defined as any material (including equipment) with a PCB concentration of greater than 50 ppm but less than 10,000 ppm.

# OUR ENVIRONMENTAL POLICY

SaskPower demonstrates environmental leadership through prudent use of natural resources, now and into the future.

We have adopted the following principles to help safeguard our air, land and water resources:

1. Compliance with relevant environmental legislation, regulations and corporate environmental commitments.
2. Prevention of pollution.
3. Continual improvement of our environmental management systems and environmental performance.

In support of these principles, SaskPower employees and those working on our behalf will:

- Manage all significant environmental aspects associated with our operations and services.
- Establish and maintain environmental objectives and targets.
- Integrate environmental considerations into corporate decision-making processes.
- Audit our environmental performance regularly, including audits for conformance with ISO 14001 Standard for Environmental Management Systems.
- Ensure employees and contractors know and fulfill their environmental roles and responsibilities.
- Avoid, reduce or control emissions or discharges which may adversely affect the environment.
- Conserve resources through efficient use and implement the fundamentals of waste management: rethink, reduce, reuse, recycle and recover.
- Communicate actively, transparently and effectively with shareholders, employees, contractors, suppliers, customers, regulators and the public on environmental issues.

# SYSTEM MAP

As at December 31, 2006

## Generation (net capacity)

*Hydroelectric*

1. **Athabasca Hydroelectric System** - 23 MW
   - Wellington (5 MW)
   - Waterloo (8 MW)
   - Charlot River (10 MW)
2. **Island Falls Hydroelectric Station** - 102 MW
4. **E. B. Campbell Hydroelectric Station** - 288 MW
5. **Nipawin Hydroelectric Station** - 255 MW
10. **Coteau Creek Hydroelectric Station** - 186 MW

*Natural Gas*

3. **Meadow Lake Power Station** - 44 MW
7. **Landis Power Station** - 79 MW
8. **Queen Elizabeth Power Station** - 385 MW
11. **Success Power Station** - 30 MW

*Wind*

12. **Centennial Wind Power Facility** - 150 MW
14. **Cypress Wind Power Facility** - 11 MW

*Coal*

15. **Poplar River Power Station** - 572 MW
16. **Boundary Dam Power Station** - 813 MW
17. **Shand Power Station** - 276 MW

*Independent Power Producer*

6. **Meridian Cogeneration Station** - 210 MW
9. **Cory Cogeneration Station** - 228 MW
13. **SunBridge Wind Power Project** - 11 MW
18. **NRGreen Kerrobert Heat Recovery Project** - 5 MW

## Transmission

- 230 kV
- 138 kV
- 138 kV line operating at 72 kV
- Switching Station
- Interconnection

# GENERATION AND TRANSMISSION SYSTEM

| Net generation (GWh) | | 2006 | 2005 | 2004 | 2003 | 2002 |
|---|---|---|---|---|---|---|
| | Fossil | **13,217*** | 13,263* | 14,370* | 14,044* | 12,659 |
| | Hydro | **4,032** | 4,573 | 2,746 | 3,416 | 2,836 |
| | Wind | **535** | 56 | 35 | 20 | 4 |
| | Total | **17,784** | 17,892 | 17,151 | 17,299 | 15,499 |

*Includes power purchased from the Coal Cogeneration Station

| Transmission & distribution lines | (pole kilometres) | 2006 | 2005 | 2004 | 2003 | 2002 |
|---|---|---|---|---|---|---|
| | Transmission (72 kV — 230 kV) | **12,212** | 12,159 | 12,149 | 12,104 | 12,026 |
| | Distribution (14.4 kV — 25 kV) | **142,843** | 142,110 | 141,408 | 140,733 | 140,084 |

**2006 gross electrical energy supplied**

Coal 57%
Gas 5%
Importation 2%

# GLOSSARY

**Biogas**
Methane created from the decomposition of organic matter such as manure or landfill waste; can be used to power engines to generate heat and electricity.

**Biomass**
Energy resources derived from organic matter. These include wood, agricultural waste and other living-cell material that can be burned to produce heat energy.

**Carbon dioxide offsets**
Initiatives designed to reduce net $CO_2$ from the burning of fossil fuels. Offsets are carried out independently of the source emissions.

**Cogeneration**
Simultaneous production of heat energy and electrical power from the same fuel in the same facility. The use of waste heat (as in steam) from an industrial process to produce electricity or the use of steam or hot water from electric power generation as a heating source.

**Distribution**
Process of moving electric energy at lower voltages from major substations to customers.

**EcoLogo**
The registered trademark of Environment Canada's Environmental Choice Program. An independent firm evaluates the product applications and certifies the products that qualify as low-impact renewable electricity.

**Electric fields**
Invisible fields of force created by electric voltage, measured in volts/metre (V/m).

**Electrostatic precipitator (ESP)**
A device for removing particles of ash, dust, smoke and other elements from air and gas flows.

**Environmental Management System (EMS)**
Part of an overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing and implementing an environmental policy and managing environmental aspects.

**Flyash**
Fine powder resulting from the combustion of pulverized coal used in many coal-fired generating stations.

**Fossil-based generation**
Includes coal- and natural gas-fired generation of electricity.

**Gigawatt hour (GWh)**
A unit of bulk energy; 1,000,000 kilowatt hours.

**GreenPower**
An EcoLogo-certified product offered by SaskPower that provides customers with the opportunity to purchase blocks of electricity produced from renewable resources with little or no environmental impact.

**Greenhouse gas (GHG)**
Naturally occurring gases such as carbon dioxide ($CO_2$), methane ($CH_4$) and nitrous oxide ($N_2O$) that trap heat in the earth's lower atmosphere.

**ISO 14001**
A standard that defines the elements of a sound environmental management system. The ISO 14000 Series is a family of environmental management standards developed by the International Organization for Standardization (ISO).

**Kilovolt (kV)**
A unit of pressure, or push, of an electric current; 1,000 volts.

**Kilowatt hour (kWh)**
A unit of bulk energy; 1,000 watt hours. The measurement is generally used for billing residential customers.

**Lignite**
A low-grade coal, intermediate between peat and bituminous; lignite has the lowest energy content among the various grades.

**Magnetic fields**
Invisible fields of force created by electric current, measured in microtesla (μT) or milligauss (mG).

**Megawatt (MW)**
A unit of bulk power; 1,000 kilowatts. The output of a commercial generator or power station is usually expressed in megawatts.

**Net metering**
The offsetting of electrical consumption by a customer against the same customer's production of electricity, typically from a small scale renewable energy source such as wind or solar.

**Oxyfuel process**
Combustion in the presence of oxygen, which results in a flue gas containing almost exclusively water and carbon dioxide.

**Particulate matter**
Emissions of ash particles from the burning of fossil fuels.

**Polychlorinated biphenyls (PCBs)**
A group of organic compounds that were once used as cooling and insulating fluids in various types of electrical equipment, including transformers and capacitors.

**Terawatt hour (TWh)**
A unit of bulk energy; 1,000 gigawatt hours.

**Transmission**
Process of moving electric power in bulk at higher voltages from the source of supply to distribution centres.

We value your feedback and involvement. To learn more about our programs and initiatives, please visit us online at saskpower.com or contact:

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